ABSTRACT OF THE DISCLOSURE

A high-speed routing search is realized by a hierarchical routing table, while a conventional network having a hierarchical network as a backbone
5   performs conventional operations without being aware of the hierarchical backbone network, in a mixed environment of the hierarchical and non-hierarchical networks, by assigning the non-hierarchical network a virtual hierarchy number equivalent to a hierarchy
10   number in the hierarchical network, attaching the virtual hierarchical number to a packet to be relayed at a router located at an entrance from the non-hierarchical network to the hierarchical network, performing hierarchical routing control by the virtual
15   hierarchy number within the hierarchical network, and by removing the virtual hierarchy number from the packet to be relayed at a router located at an exit from the hierarchical network to the non-hierarchical network.